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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/809,244

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EXAMINER

LOVEL, KIMBERLY M

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/809,244	Applicant(s) GUPTA ET AL.	
	Examiner KIMBERLY LOVEL	Art Unit 2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-16 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-16 and 25-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 8-16 and 25-28 are rejected.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 22 January 2009 has been entered.

Claim Objections

3. Claims 8, 13 and 25 are objected to because of the following informalities:

It is suggested that the parenthesis around "N," "T" and "N/T" be removed in each of the claims. Currently it is unclear whether or not these items are part of the claimed limitations.

Also, after the recitation of the limitation "(i) at least a minimum number (N/T) of sub-databases of the forwarding database," it is suggested that the variables N and T be defined. The specification defines N as the total number of prefix entries in the forwarding database and T as the maximum number of prefix entries allowed in each sub-database.

- Claim 13 recites the limitation "the total number of sub-databases" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 8, 9 and 25 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2 and 12 of U.S.

Patent No. 7,426,518. Although the conflicting claims are not identical, they are not patentably distinct from each other because the forwarding database formed in both the present application and the patent claim the same structure. The patent states the limitation of "forming a first set of pointers wherein each of the first set of pointers points to a respective one of the sub-databases" while the present application states "a hierarchical tree structure." It is well-known to one

of ordinary skill in the art that a hierarchical tree structure inherently includes pointers to each level of the tree. Also, the present application includes limitations relating to updating the tree. It would have been obvious to one of ordinary skill in the art at the time of the invention to update the forwarding database of the patent in order to maintain current information. Claims 9-16 and 26-28 are rejected for the same reasons as stated above.

Present Application 10/809,244	US Patent 7,426,518
<p>8. A method for updating a forwarding database that includes a number (N) of prefixes, the method comprising:</p> <p>forming a hierarchical tree structure having root, branch and leaf nodes that define (i) at least a minimum number (N/T) of sub-databases of the forwarding database and (ii) respective bit combinations associated with the sub-databases, wherein each prefix of the N prefixes is stored within one of the sub-databases having an associated bit combination that matches corresponding bits within the</p>	<p>1. A method of forming a forwarding database for routing packets of data in a communication network, the method comprising:</p> <p>splitting N number of prefixes within the database, based exclusively on values of one or more unmasked bits within the prefixes, into a number of sub-databases bounded proportional to N and inversely proportional to T, and wherein each sub-database has no more than T number of prefixes, with T being a predetermined value less than N, and at least one of the sub-databases having more than one</p>

<p>prefix, and wherein each of the sub-databases has no more than a predetermined number (T) of prefixes and stores prefixes that are not stored in any of the other sub-databases;</p> <p>modifying the hierarchical tree structure in accordance with one or more update operations; and</p> <p>updating one or more of the sub-databases to reflect modifications made to the hierarchical tree structure, wherein the one or more updated sub-databases correspond to only those portions of the hierarchical tree affected by the update operations.</p>	<p>prefix; and</p> <p>forming a first set of pointers wherein each of the first set of pointers points to a respective one of the sub-databases.</p>
<p>9. The method of claim 8, wherein said forming comprises, beginning with a most significant bit of the N number of</p>	<p>2. The method as recited in claim 1, wherein said splitting comprises, beginning with the most significant bit</p>

<p>prefixes, repeatedly splitting the N number of prefixes into a plurality of nodes extending between and including a root node and a plurality of leaf nodes, and wherein each of the leaf nodes corresponds to one of the sub-databases.</p>	<p>of the N number of prefixes, repeatedly splitting the N number of prefixes to form a tree extending between a root node and a plurality of leaf nodes, wherein each leaf node has no more than T number of prefixes.</p>
<p>25. A computer-readable storage medium having recorded therein one or more sequences of instructions which, when executed by a processor, cause the processor to update a forwarding database having a number (N) of prefixes, including causing the processor to:</p> <p>form a hierarchical tree structure having root, branch and leaf nodes that define (i) at least a minimum number (N/T) of sub-databases of the forwarding database and (ii) respective bit combinations associated with the sub-databases, wherein each prefix of</p>	<p>12. A computer-readable storage medium bearing instructions which, when executed by a processing entity, causes the processing entity to:</p> <p>split N number of prefixes within the database, based exclusively on values of one or more unmasked bits within the prefixes, into a number of sub-databases bounded proportional to N and inversely proportional to T, and wherein each sub-database has no</p>

<p>the N prefixes is stored within one of sub-databases having an associated bit combination that matches corresponding bits within the prefix, and wherein each of the sub-databases has no more than a predetermined number (T) of prefixes and stores prefixes that are not stored in any of the other sub-databases;</p> <p>modify the hierarchical tree structure in accordance with one or more update operations; and</p> <p>update one or more of the sub-databases to reflect modifications made to the hierarchical tree structure, wherein the one or more updated sub-databases correspond to only those portions of the hierarchical tree</p>	<p>more than T number of prefixes, with T being a predetermined value less than N, and at least one of the sub-databases having more than one prefix; and</p> <p>form a first set of pointers wherein each of the first set of pointers points to a respective one of the sub-databases.</p>
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affected by the update operations.	
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Allowable Subject Matter

6. Claims 8-16 and 25-28 contain allowable subject matter. The following is a statement of reasons for the indication of allowable subject matter:

In the Examiner's Final Office Action dated 10 November 2008, claims 8-11 and 25-28 were rejected under 35 USC 103 based primarily on US Patent No 6,018,524 to Turner et al and US Patent No 7,162,481 to Richardson et al and claims 12-16 were rejected under 35 USC 103 based primarily on US Patent No 6,018,524 to Turner et al; US Patent No 7,162,481 to Richardson et al; and US Patent No 6,735,600 to Andreev et al.

The claimed invention is directed towards the updating of a forwarding database, wherein the database is represented by a tree that contains sub-databases which store prefixes. The prefixes are stored only in one sub-database and each sub-database stores no more than a maximum number of prefixes.

The prior art of record, US Patent No 6,018,524 to Turner et al; US Patent No 7,162,481 to Richardson et al; and US Patent No 6,735,600 to Andreev et al, do not show, teach or suggest the combined features of, **forming a hierarchical tree structure having root, branch and leaf nodes that define (i) at least a minimum number (N/T) of sub-databases of the forwarding database and (ii) respective bit combinations associated with the sub-databases, wherein**

each prefix of the N prefixes is stored within one of the sub-databases having an associated bit combination that matches corresponding bits within the prefix, and wherein each of the sub-databases has no more than a predetermined number (T) of prefixes and stores prefixes that are not stored in any of the other sub-databases; and updating one or more of the sub-databases, wherein the one or more updated sub-databases correspond to only those portions of the hierarchical tree affected by the update operations in combination with the other claimed features. Turner et al discloses the concepts of forming a hierarchical tree containing prefixes and updating the sub-databases. Turner et al fails to explicitly disclose the concept of the tree containing a minimum number of sub-databases wherein the minimum number is calculated by dividing the total number of prefixes in the database by the maximum number of prefixes allowed in each of the sub-databases. Richardson et al discloses the concept of storing prefixes in a plurality of sub-databases. Unlike Applicant's claimed invention where the prefixes are stored only in one sub-database, each prefix is divided in 4 bit segments and each segment is stored in a separate sub-database.

An updated search for prior art on the EAST database and on domains (NPL- ACM, Google, IEEE) has been conducted. The prior art searched and investigated in the database and domains does not fairly teach or suggest the teaching of the claimed subject matter as described above and reflected by the combined elements in independent claims 8 and 25. Dependent claims 9-16 and 26-28 depending directly upon claims 1 and 25 are also distinct from the prior art

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for the same reasons.

7. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIMBERLY LOVEL whose telephone number is (571)272-2750. The examiner can normally be reached on 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John R. Cottingham/
Supervisory Patent Examiner, Art Unit 2167

Kimberly Lovel
Examiner
Art Unit 2167

8 April 2009
/KL/

